

The only Ctenostomatous species is represented by one or two imperfect specimens parasitic upon *Bugula fruticosa*. These, moreover, are so few and so much injured and overgrown by Diatoms, that it is impossible to give an accurate definition of the form, which does not appear to resemble any British species with which I am acquainted, nor does it correspond with Leidy's description and figure of *Bowerbankia gracilis*. In case it be new, it might be termed *Farrella*, or, if with a gizzard, perhaps *Bowerbankia arctica*.

DESCRIPTION OF PLATE XIII.

- Fig. 1. *Bugula fruticosa*, Packard. Portion, enlarged 25 diam.
 2. *Flustra serrulata*, n. sp. Forked branch, of nat. size.
 3. „ „ Another small piece, of natural size.
 4. „ „ A portion, magnified 25 diam.
 5. *Eschara perpusilla*, n. sp. A forked branch, magnified 25 diam.
 6. *Cellepora cervicornis*, Busk. Bifurcating branched portion, of natural dimensions.
 7. A zoecium of *C. cervicornis*, enlarged 50 diam.
 8. Zoecium of same, also magnified 50 diam.
 9. *Farrella arctica*, n. sp. Portion, enlarged 25 diam.

On the Classification of Gasteropoda.—Part II. By JOHN DENIS MACDONALD, M.D., F.R.S., Inspector Gen. R.N. (Communicated by G. E. DOBSON, M.B., F.L.S.)

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THE Scutibranchiata, which were in my former system* incorrectly associated with the diœcious Gasteropoda, have been arranged in the above revised Table with the other Gasteropoda Monœcia.

The conscientious naturalist, like the theologian, is always in quest of the truth; and consequently, if he finds that this has been arrived at by one or many workers, it need not be subverted for the pure sake of change, or of presenting a subject in a more novel garb. I have therefore adopted the very natural and simple distribution of the Scutibranchiata given by Dr. Gray in his 'Guide to Mollusca,' carrying out an alteration which he has himself suggested, and the propriety of which has indepen-

* See 'Transactions of the Linnean Society,' vol. xxiii. p. 69 (1860).

dently occurred to me when studying the Helicinidæ, and comparing them with the true Nerites, both aquatic and marine. I would merely further take the liberty of inverting the order in which Dr. Gray's families are arranged, as being thus disposed more in accordance with the method adopted in classifying other natural groups in the first part of this paper. This will be permitted, I am sure, even by the most conservative, as by doing so no natural affinities will be violated, while we shall have the satisfaction of seeing that *Helicina* and its congeners are not thrown more widely apart from the other so-called Pulmonifera operculata than can possibly be helped. Raphidoglossa (or needle-beset tongue, as the word implies) is scarcely descriptive enough, or even suggestive of the complex and beautiful structure which it is intended to express; but inasmuch as we have been now sufficiently accustomed to associate the name with the thing signified, it would be unnecessary to alter it. The term Heteroglossa may also be retained as indicative of what may be clearly recognized to be a morphological modification of the primary type (Raphidoglossa).

Dr. Gray saw the necessity of arranging *Proserpina* and *Ceres* with the Scutibranchiata, their dentition being *raphidoglossal*, though it was only possible for him then to append them to what had been already printed. He prepared the suborder Pseudobranchia for their reception. This was a step in the right direction; and doubtless if he had not been misled by some means so as to have supposed the dentition of *Helicina* to be *septiserial* instead of *raphidoglossal*, which it truly is, he would have placed it in the same category with *Proserpina* and *Ceres*. There would thus be good reason for removing both the Olygyradæ* and Proserpinidæ from their association with the Cyclophoridæ and Littorinidæ.

If we now take the two orders Heteroglossa and Raphidoglossa, and apply the test of analogy as suggested in the first part of this paper, we shall find a rather interesting result. Thus *Cryptochiton* in the former group would nearly represent the shellless *Deridobranchus* in the latter; *Patella* would be answer-

* *Olygyra*, Say, is merely a synonym of *Helicina*, upon which Dr. Gray has founded the family name Olygyradæ, though the generic name of *Helicina* is retained to the exclusion of *Olygyra*. In a somewhat similar way the family name *Olividæ* is preserved, while the generic name *Strephona* is made to supersede that of *Oliva*.

Suborder 2. ANACLODONTA. Cusps recurved from the fore part of the basal plates. Dentition typically septiserial, but in some instances reduced to 5 or 3 rows by suppression,

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|--------------------|-------------------|
| <i>Velutinidæ.</i> | <i>Ranellidæ.</i> |
| <i>Naticidæ.</i> | <i>Doliidæ.</i> |
| <i>Tritonidæ</i> | <i>Cassididæ.</i> |
| <i>Strombidæ.</i> | |

Order II. ROSTRIFERA. Muzzle simple or proboscis rudimentary.

Suborder 1. ORTHODONTA. Cusps direct.

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|----------|--------------------|
| Pelagic. | <i>Heteropoda.</i> |
| Marine. | <i>Phoridæ.</i> |

Suborder 2. ANACLODONTA. Cusps recurved.

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|------------------------|---|--|-------------------------|---|------------------------|
| | | | <i>Cypræidæ.</i> | | |
| | | | <i>Vermetidæ.</i> | | |
| | | | <i>Calyptræidæ.</i> | | |
| Marine and littoral... | { | | <i>Planacidæ.</i> | | |
| | | | <i>Littorinidæ.</i> | | |
| | | | <i>Rissoidæ.</i> | | |
| | | | <i>Truncatellidæ.</i> | { | <i>Cerithiidæ.</i> |
| | | | | | <i>Cerithidea.</i> |
| Aquatic..... | { | | <i>Melaniadæ.</i> | | <i>Potamidinæ.</i> |
| | | | <i>Paludinidæ.</i> | | |
| | | | <i>Valvatidæ.</i> | | |
| Terrestrial | { | | <i>Cyclostomidæ</i> and | { | <i>Cyclophoridæ.</i> |
| | | | their allies. | | <i>Diplommatinidæ.</i> |

All the families in the first column have *otoliths* in their ears; the few on the right have *otoconia*. This may be significant; but the subject requires further study.

Just as we have found terrestrial, aquatic, and marine Nerites, there is good promise that corresponding groups may be discovered in relation to other types of Anacloodontous Rostrifera with septiserial ribbons, the grouping of which is at present very imperfect. In this research, however, the shell-characters must be subsidiary to the most critical record of the anatomy of well-determined species, so as to afford legitimate grounds for their adoption or rejection as the case may require.

Indeed, from my own experience, I am quite sure that without this test the assumption of the alliance of even one so-called species with another founded on superficial resemblances can only be guesswork, allowable certainly for convenience and provisional arrangement, but it must always be amenable to the dictum of more precise anatomical knowledge.